

Virtual Dental Home Maui: A Usability Study on the Teledentistry Website

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Abstract: It is important to have a website designed for students to use during their volunteer activity in the Virtual Dental Home (VDH). Dental hygiene students learn about community dental health during their formal educational experience. A portion of the curriculum is dedicated to service-learning through volunteering which is encouraged by the instructor to promote experiential-learning. VDH incorporates the use of teledentistry to allow the hygienist and volunteer dental hygiene student to perform necessary dental therapy while they communicate directly with other healthcare providers. Using teledentistry, dentists and other medical personnel do not have to be physically present to care for patients. The website was purposefully designed to be simple and easy to navigate to be considerate of the student's time. A usability study was conducted with 13 University of Hawaii Maui College students to assess the functionality and value of the website Volunteer Now! Virtual Dental Home Maui. After viewing the website, all participants strongly agreed or agreed that volunteering in VDH is now more attractive to them and they are prepared to volunteer. They all strongly agreed or agreed that they could find their way around the website, got to information quickly, and were satisfied with the design and performance of the website. The website enhances the learning experience by informing students about how VDH can provide alternative learning experiences, community service projects, and work environments.

Statement of the Problem

Dental hygiene students need to know the technical aspects of what is expected of them, and more importantly, they need to take to heart the rationale for this teledentistry project. Technology can be challenging for anyone, but the students truly care about giving their time and effort into delivering needed dental hygiene services, and they will use this website to search for information about VDH. The students need technological tutorials and resources to help them with basic operator set ups, dental tools such as portable radiography, troubleshooting technical problems, and finding volunteer opportunities.

Traditionally, dental hygiene has always been taught in an institutional based university clinic setting where the students have the dentists and the dental hygiene instructors physically present, directly supervising them as they deliver dental hygiene care. This would limit the learning to only when the dentist can be physically present at the site and it is not much of a self-directed learning experience (Kim, Olfman, Ryan, & Eryilmaz, 2014).

Students have limited experience with client care, particularly with populations such as those with intellectual and cognitive disabilities, children, and older adults. Because this VDH pilot project targets those with limited access to care, the students learn why it is so important that they choose to see clients in these vulnerable populations (Institute of Medicine (IOM) and National Research Council (NRC), 2011).

This website was needed because currently students had difficulty accessing the available Canvas course developed by the team from the University of the Pacific (UOP). This is because the University of Hawaii Maui College (UHMC) students had to set up a username and password through UOP. Currently there is fragmented information available partially from the Canvas site, the UOP site, and through my classroom instruction. There are also cultural and geographical differences between clients in Hawaii versus those in California where UOP is located and students need a website with language and information pertinent to them.

The purpose of this usability study was to evaluate the usability and value of a website designed to empower dental hygiene students at the University of Hawaii Maui College as they volunteer and participate in the VDH teledentistry pilot project.

Literature Review

We know that the world of healthcare, according to Glassman (2016), “is undergoing tremendous change. This is driven by increased recognition that the current healthcare system spends too much money and achieves too little” (p. 1). Students face significant barriers to providing dental care which include supervision laws, the cost of volunteering, and the geographic distribution of patients. It has become clear that the path to improving oral health of the population involves emphasis on significantly different activities than have been utilized in the traditional oral health care system. The students need motivation to explore opportunities to care for patients with complex oral, physical, and mental health care needs. There are now alternatives to the long-established method of dentistry. Teledentistry connects team members with one another to enable the delivery of dental care and dental services in locations more convenient to the clients. When dental care is expanded into community locations, many more people can receive necessary dental treatment, education, and prevention. These early intervention strategies can potentially keep a multitude of people from developing advanced oral and dental diseases (Glassman, Harrington, & Namakian, 2016).

To ensure that current and future dental hygiene students can deliver quality care to diverse populations in various settings, an improved and responsive dental hygiene education is needed. When vulnerable and underserved individuals are cared for right in their own homes or communities, the students’ and patient’s comfort levels improve. The State of Hawaii has recognized that VDH is an innovative health care solution to address financial burdens, the shortage of healthcare providers in certain areas, and to improve health outcomes (ACT 226, 2016). This experiential learning method increases the likelihood that these health professionals will volunteer and care for these vulnerable populations in their future careers. As students are exposed to clinical experiences in

community-based settings their self-confidence in caring for vulnerable and underserved clients will increase (IOM & NRC, 2011). Bloom and Krathwohl explain that the affective domain begins with students receiving knowledge. The affective domain of learning is recognized as being extremely important, but it is difficult to implement and evaluate (Krathwohl, 2002). The website has exposed the students to a groundbreaking new way of dealing with the worldwide problem of limited access to care due to no insurance coverage, vulnerability of clients, linguistic and cultural barriers, unavailable health services, living in rural communities, and delays in the timeliness of care.

Why is volunteering important? Volunteering provides the students an opportunity to participate in the experiential learning model of service-learning. The teaching and learning experience of service-learning puts emphasis on collaboration between other healthcare professionals, the student, the dental hygiene instructor, and the community partners (Beatty, 2017).

Methodology

This website was designed to inspire dental hygiene students to seek out information on how they can make a difference with new ways of community outreach as they strive to become healthcare professionals. They need appreciation for the value of volunteerism to recognize the benefit to their personal life, their academic lives, and the community.

The website emphasized the affective domain of learning, and the students have demonstrated a positive increase in attitude towards administering oral care in varying environments with patients from all ages, socioeconomic status, and cognitive levels. The website was purposefully designed with minimal sounds, photographs, and words (Walsh, 2017). These students viewed photos demonstrating how hygienists actively and cooperatively care for clients, see client's needs first hand, and learn how they can make a difference while enjoying being a good and reliable volunteer.

The usability study demonstrated the optional and necessary improvements that could be made to each iteration to make the website easier to navigate and more useful for the students. Each round of testing was analyzed to find the most important problems to address.

Research Questions/Goals

This usability study had specific goals relating to the ease of use and convenience of accessing information to assist the students in planning for their VDH volunteer experience.

1. How satisfied are the participants with the design and content of the website?
2. Can the students navigate and find information on how to prepare for the VDH site visit?
3. Can the students navigate and find tutorials about exciting technologies in the VDH site?

To evaluate the goals of the website, the following research questions (RQ) were posed to the participants to learn their initial perceptions about the website.

Table 1
Initial Perception Research Questions

Question number	Research Questions (RQ)
RQ 1	What stands out to you?
RQ 2	Initial reaction to the page colors, graphics, photos, etc?
RQ 3	What do you think is the purpose of this website?
RQ 4	What do you think you can do here?
RQ 5	Who do you think is the audience for this website? Who is it intended for?
RQ 6	Describe the options you see on the homepage and what you think they do.

The participants were then asked to complete specific tasks (T) (See Table 2). The first task was to determine if they could identify the purpose of the website. They were asked (T1) Using this website, where would you find information about the reasons why you should volunteer in the VDH project? The second, third, and fourth tasks were designed to determine navigability and to find out if there is useful content in the website. (T2) Using this website, where would you go to find information about new teledentistry technology? (T3) Using this website, where can you find the information explaining what you would need when you go to a site visit. (T4) Using this website, find where and when the scheduled VDH site will be next week? Following these tasks, they were then asked follow up research questions (See Table 3). These follow up questions were designed to allow evaluation of the navigability and usefulness of the content in the website. I asked if the tasks were easier or more difficult than tasks they have done previously. I also asked participants to think of one significant change they would make to the website. The final question was to determine if they would recommend this website to other classmates, or why they would not.

Content Analysis

The content was scaffolded by having separate tabs delineating sections for each of the previously decided on topics during the initial content analysis. The cognitive domain of learning is used to allow the students to access just-in-time technical information when needed. The homepage (along with the drop-down tabs which were added after the first and second testing rounds) contains general information on VDH and teledentistry, information on how to volunteer, and the reasons why volunteering is a good idea (See Appendix A). Following the idea developed during the paper prototype, the next tab and drop-downs contain explanations of technology enabling students to assess, record, diagnose, and deliver care in remote locations from the dentist (DiGangi, 2017). Technical information, like how to use portable radiography devices such as the NOMAD Pro 2TM to take radiographs outside of a traditional dental office and intraoral camera tutorials, are included in the website (See Appendix B). The prior (a) “procedural knowledge” of taking traditional radiographs triggers the first order of Krathwohl’s (2002) revision of Bloom’s Taxonomy, remember (p.3). In the cognitive domain of learning, the website triggers the students to activate their prior subject specific

knowledge to remember how to expose radiographs and their memory of seeing the new technology of the portable radiographic equipment NOMAD 2TM. They go through the next category – (b) understand, through comparing their current way of using traditional equipment with the tutorial available on the website for the NOMAD 2TM. This website prepares students for the next category – (c) apply, which they will use during the volunteer activities in the DH 263 clinic course. In the next category - (d) analyze, the website helps students learn about telehealth modalities and oral health systems. The next category - (e) evaluate, is when students evaluate the scenarios that they view in the website. The last category - (f) create, occurs as the VDH model expands the student dental hygiene care to a variety of community settings (California Department of Public Health Oral Health Program, 2018). They learn valuable communication skills, accurate dental charting, radiographic imaging, and other preventive therapy skills while being in constant communication through technological tools with the dentist and instructors.

Prior to each testing round, site visits were added to the calendar after the VDH hygienist informed me of the dates and times. Only five calendar events are allowed in the free version of WIX, so with each iteration, I deleted old site visits and added five new site visits. I met with the VDH information technology specialist to add the Outlook calendar to the WIX site, however it was not compatible. They decided to add the VDH site visits to an unused Google account calendar and share it with my Google account calendar to be embedded to the website. The site visits were still not visible on the calendar until I manually transferred the shared calendar information into my Google calendar. Current and future students are now able to find and plan for site visits that they would like to volunteer in.

The project allowed students to develop skills and gives them real-world experiences. Dabbagh's (2010) project shows that students, "were able to connect what they were learning to the needs of the project and to meaningfully link knowledge acquired in other courses to the project" (pp. 20 - 21). Following the paper prototype (See Appendix C), the special needs page, allows the students access to videos and information to resolve conflicts as they actively respond and participate in the hands-on experience (See Appendix D). This website contains information the students need to problem solve, recognize patient needs, and to resolve individual oral care issues in a professional and caring manner. The section for special needs clients such as elderly, disabled, and young clients, is helpful for students as they gain real world experiences while providing valuable service to their community.

Recruitment and Participants

The research subjects are the 13 dental hygiene students who accepted the invitation to participate in the usability study. They are in their clinical rotations during the fourth semester of their two-year dental hygiene associate's degree program at UHMC. A recruitment email (See Appendix E) was sent to the 15 dental hygiene students in the cohort during the Christmas break, but only two responded. Then I recruited by asking students again in person, they were not coerced and were informed that I am testing my website's usability and that they were not being tested. Four students volunteered for the first round of testing, five volunteered for the second round, and for the third round four

more students volunteered. These participants were chosen because it is advisable to involve users from the target audience. Also, having student involvement throughout the designing stage gave them a feeling of ownership where they know that their ideas and suggestions have been incorporated in the website. This results in increased satisfaction and a smoother integration of the website into the curriculum (Bainbridge, 2004). The subjects are students enrolled in dental hygiene (DH) 263 clinic course which I am co-teaching. They were informed that their grades will not be affected in any way by their choice to participate or not to participate in this study, nor were they coerced or influenced into participating in this study. The students in the dental hygiene cohort are in my locus of control and represent the actual users of the website. They were protected from coercion and undue influence through an explicit informed consent and recording release form (See Appendix F) and informed that they were free to stop the usability test at any time. The students experienced minimal risks or benefits for participating in the study, and they were not compensated for their participation.

Both Krug and Nielsen recommend having three to five evaluators because there is not much additional information that can be gained from using more evaluators. At least 3 participants were recruited for each round of testing because most significant usability problems are found by the first 3 testers (Nielsen, 1995a). These students are enrolled in the course DH 263 clinic, which I am teaching and in other courses to meet graduation requirements. The participants are of different gender, where 11 are female and 2 are male. They range in age and previous experience in dentistry. Although they are intelligent, they need reminders, are busy preparing intensely for their written and clinical boards and need a straightforward website. The website is designed to function the same way as websites they are familiar with.

Upon close examination, a majority of the students are millennials between the ages of 18-28 (Table 4). Millennials place high emphasis on job satisfaction and they receive job satisfaction from volunteering (Landrum, 2017). This finding supports the rationale for the necessity of this website. These students have done one observation of the VDH project in the fall 2018 semester during the DH 262 clinic course. In DH 263, they implemented the learned trainings during individual clinical rotations and volunteering at the VDH site with the VDH hygienist, and the VDH dental assistant. Together, they learn to communicate with the VDH dentist from the Hui No Ke Ola Pono, and other medical professionals.

The website introduced the students to a variety of clients such as pediatric and geriatric clients, those with special needs, dementia, hearing loss, and other medical complications to assist them in learning to care for all types of clients (See Appendix A). Some students have very limited experience and are fearful of elderly clients, children, or those with cognitive and developmental disabilities. The students are all different and there are some who are timid in approaching clients, but some are bold and take the lead in reaching out to the clients.

During the student's educational career, the concerns with the dental and overall health of others are fostered. They learn how to be culturally competent in the required courses

such as clinic and community health education. Cultural competence involves knowing the oral health disparities between different populations of people that the dental hygienists serve. It also involves knowing about the oral health initiatives that could solve the health disparity problems such as low socioeconomic status, being in vulnerable age groups, belonging to minority races, having cultural differences, lacking access to care, and having no dental insurance (Beatty, 2017).

The students are all intelligent and quick learners, but they need reminders when introduced to new concepts. The students are talented and have developed exceptional hand eye coordination and computer skills throughout their educational experience. This website allows them to have access to the procedural, technical, and logistical information necessary for the VDH project. They will learn how to create the VDH site and transform a little area into a dental operatory without leaving a trace that they were there (See Appendix G).

Volunteering through service-learning is a big part of the students' learning experience during their final year, and this is an important part of the teaching curriculum. The best way to learn about a real-world subject or to practice and hone skills is to volunteer and learn from people in the community. The community plays a central role in the process of making things meaningful because we learn how to serve others to develop a richer sense of self. The volunteers also get a better understanding of their needs and how we can resolve conflicts to meet them. Students gain opportunities to network and experience in interprofessional collaboration through their service-learning experience. This website encourages volunteerism in this project outside of the students' required coursework.

To prepare for the usability study, I completed the CITI training for human studies research, exempt researchers and key personnel and IPS, 1 basic course, social and behavioral responsible conduct of research, and information privacy security (See Appendix H).

Evaluation Instruments

Following approval from the Institutional Review Board (IRB), an access letter requesting permission to conduct the usability study and to contact participants via email was sent to the dental hygiene program director (Appendix I). A recruitment email was sent out to all students and the first three to five to respond were chosen for each (approximately) one hour testing round (See Appendix D). A confirmation email was sent to the students giving them information regarding the logistics of the testing (See Appendix J). They were scheduled for the three testing rounds. I emailed each participant a copy of the consent and recording release form and had a printed form for each of them to sign prior to the testing (See Appendix E). During the administration of the usability study, I referred to the checklist to facilitate the usability test (See Appendix K). This checklist contained information about how to set up the technology to facilitate the recording, for the participant to view the website and navigate, and how to save the recording. There was a pre-survey and a post-survey (See Appendix L) administered to the participants through Google forms containing five-point Likert scale questions.

These questionnaires assisted me in gathering the necessary data for the usability tests. Participants were each asked to sign in to their Gmail account and access the email link that I provided to the pre-survey and post-survey. They were then asked to complete the pre-survey portion only before commencing with the usability study. The participants and I went through the scenario and tasks sheet during the testing (See Appendix M). The usability study was conducted in three rounds of testing followed by a survey for all participants with adjustments to the website throughout the formative evaluation process.

According to Krug (2010), “the scenario is like a card you might be handed for an improvisation exercise in an acting class: it gives you your character, your motivation, what you need to do, and a few details” (p. 53). The scenarios were designed to give context to the task and gave the participant information necessary for them to navigate through the content of the website. Each participant performed these tasks one by one as they went through the heuristic evaluation process (Nielsen, 1995a).

The screen and voice of each participant was recorded using Screencastify. The usability test script (See Appendix N) was utilized to conduct the study in an organized manner. If the participants had questions during the test, I answered them if they were clearly in trouble to better assess the usability of the site and to keep from wasting time (Nielsen, 1995a).

Project Design Strategies

At the onset of the design process, the subject matter experts (SMEs) - Dr. Glassman, the VDH team from UOP, the State of Hawaii dental division dentist and hygienist, the director of the UHMC dental hygiene program, the dentist from Hui No Ke Ola Pono, and the VDH Maui hygienist were consulted in a series of telephone conference calls over a two-year time period. After much discussion of the possibility in conducting an action research or instructional design project, I decided to do a usability study and design a website with the information necessary for students to volunteer in the Maui VDH project. The design is compatible with both computer as well as mobile devices to allow maximum flexibility in accessing the content. The website contains photos chosen to pictorialize the volunteer activity. All of the subjects in the photos have read and signed the photo and video recording release form (Appendix O). Included in the website are updated schedules of site visits, maps, and other information to allow just-in-time information about the VDH sites and logistics. Although it was challenging to incorporate, all of the necessary content is easily accessible while keeping the modernist, minimalist design in mind (Thorlacius, 2007).

The students are able to improve their ability to learn information from a website that does not have extraneous words, pictures, and sounds. Following Mayer’s coherence and spatial contiguity principles (See Table 5), the website includes coordinating photographs with information on the necessary technological tools needed as well as the concern for patient privacy.

The signaling principle is incorporated in a checklist of what the students will need to bring for the site visits to help them prepare for the volunteer experience. The website is

personalized for Maui dental hygiene students with links to background information that they need for special needs clients such as geriatric patients (kupuna), children (keiki), and those with disabilities (Walsh, 2017). The best way of knowing I have succeeded in my design is from seeing an improvement in the student's attitude towards volunteering with underserved populations of dental patients.

The construction of the website began with a paper prototype. It was easier to be creative and to visualize the actual pages with included content than by using a wireframe. The page layout and content was designed to be organized in individual pages (See Appendices C, P - S). The website building tool WIX was chosen to build the website prototype (See Appendix T) because there was a small learning curve. The data was collected and secured in Google drive with privacy set so only I can view the information to use in the study.

This website prototype was originally created with dark background and white font. After studying design strategies related to white or black background and conducting a cognitive walkthrough with a friend, I decided to change the prototype colors to a light lavender with alternating darker images instead of the original dark layout colors (See Appendix T, U). Black backgrounds decrease readability and should not be used when there is a lot of content on the website and, "it is considered to be depressive, pessimistic, serious, sad, and the color of negativity" (Zoric, 2018). The background is lilac and the font is dark purple. From the time I entered the dental hygiene profession, I was aware that lilac is the color of dental hygiene and purple is the official color of dental professionals. This has been the official color since 1897 when lilac was chosen to be the emblem of the National Association of Dental Faculties. The shade of lavender which I used for the background is the color of all of my student's scrubs, and purple is the trim color for many dental hygiene graduate caps and gowns throughout the United States and Canada. Purple is said to signify compassion, purpose, and inspiration (Put Your Purple On, 2019).

Procedures

The students enrolled in DH 263 Clinic at UHMC were purposefully chosen to participate in the usability study during the beginning of the Spring 2019 semester. The measurable usability criteria for success addresses the issues related to the effectiveness, efficiency, and the user's satisfaction with the website. Formative evaluation assists in the development and improvement of the website because the concept of a user-centered design is followed. The students were involved during the design process for the purpose of developing a satisfying design for them, the target audience (Abrams, 2004).

The usability test was conducted in the teacher's office before or after the course DH 263 clinic according to the agreed upon scheduled times from the participants. The first round was done after the website was developed on January 8, 2019. I had four students assess the ease of use of the website and conduct pre and post-surveys. The second round was done after revisions were made to the website on January 22, 2019 and this involved five students who performed the same specific tasks on the website. The students were observed and evaluated and also completed the pre and post-surveys. After revisions were made, the third iteration was done on February 5, 2019 with four dental hygiene

students who performed the same tasks and completed the same pre and post-surveys. Each individual participant was informed in writing and through verbal instructions that the usability test will take approximately one hour and that they were free to stop or take a break at any time with no penalties. The usability studies as conducted took less than half an hour each.

Following the information from Krug (2010), I assessed the severity of usability problems to determine if the problem is a common or rare occurrence (p. 104). The impact of the problem to see if it is easy or difficult for the users to overcome was also considered. I was also able to discover if this problem only occurred once and can be overcome when the students know about it, or if they are repeatedly bothered by the problem. Although only one participant stated that VDH times were not on the calendar, according to Nielsen's severity rating, I decided that this was a high impact problem and I gave it a severity rating of four because students need to know the date as well as the time of the VDH site visits. I also made a drop down tab for some information on the home page because the users frequently said that there was too much information on the home page and gave it a severity rating of 3 (Nielsen, 1995b) (See Table 6).

To observe the effectiveness of the website, I conducted a post-survey with Likert scale questions on Google forms and an interview after the participants viewed the website. This was followed by a summative evaluation of the findings where all identifying information were removed from the data so that only I would be able to identify the participant. The Screencastify recordings were saved in Google drive, and all recordings were destroyed after the completion of the studies. The participants were allowed to view the website through a requested web link after completion of the study to allow them access to information regarding the VDH.

Results

I went through all Screencastify videos and took thorough notes in order to create a spreadsheet to organize the data. My first impressions were that the results were good from all testing rounds. The participants had positive things to say about the website, and other than a few undecided participants, overall they strongly agreed or agreed on all survey questions. Overall, I had positive response from the participants and all of them stated that they completed all tasks. However, there were a few that got confused during task execution and did not complete the tasks as I had intended for them. The following table displays the interpretation of data (See Table 6).

Table 6
Data Interpretation

Research Question	Data collected	Interpretation
Perception (RQ 1 – 6)	Interviews	All participants loved the pictures.
Tasks (T1 – 4)	Observations	All participants said they completed the task, but not all completed tasks in the way I intended.
Follow up (RQ 7 – 9)	Interviews	Respondents claim the website was easy to navigate. The suggested changes are: font, organization, adding a sign up, and times for VDH. All participants report that volunteering is more attractive after viewing the website. All recommend the website because it has good information for classmates and future students, it is a good reference, and it can show others what VDH is.

The data has been analyzed and the outcome is that 92% of students think that the overall design is appealing. (See Appendix V). This is because the pictures of happy keiki and kupuna stand out to them. (See Appendix W).

The participants were pleased with the website, and this was reflected in the grade given to the website. All respondents gave the website an A or a B. In the post-survey, 85% of respondents gave it an A and, 15% gave it a B. I created a word cloud to show the results of the follow-up open-ended responses in the post survey (See Figure 1). The word cloud illustrates the favorable responses that the participants had as to why they chose this grade for the website.



Figure 1. Post-survey word cloud. Participant response to the open-ended question, “Why did you give the website this grade?”

All of the participants agree or strongly agree they were satisfied with the website performance. During the usability study, they all were able to navigate and find needed information and tutorials on how teledentistry can be used during the VDH site visit.

All users agree or strongly agree that they were able to get to information quickly which makes this website a great reference for learning how teledentistry works (See Figure 2).

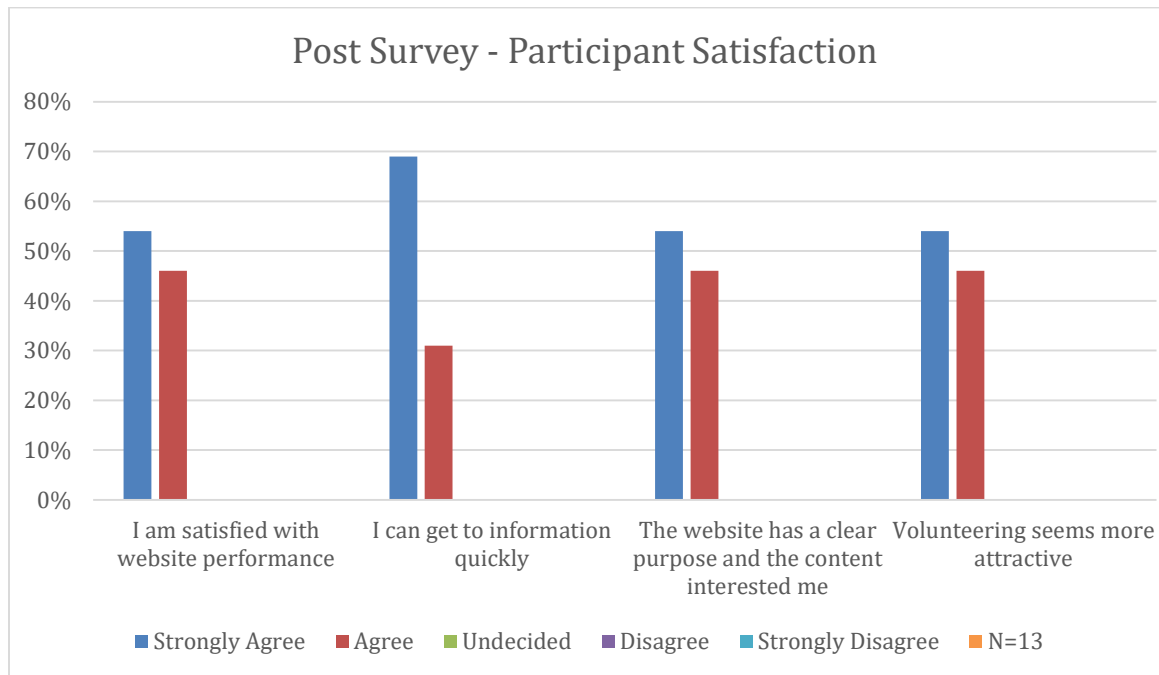


Figure 2. Post-survey – Participant satisfaction

As the participants viewed the website, one participant commented that, “not everyone is exposed to VDH and they don't know what to bring when they volunteer. VDH is not just for elderly, we see little kids too.” Students have deepened their appreciation and understanding of proper patient care, to better recognize patient needs and the ways to resolve individual oral care issues in a professional and caring manner. From this website, they learned how technology can be utilized to create valuable professional relationships with dentists, dental personnel, medical personnel and nursing home staff. Every participant was motivated after viewing pictures of people who are elderly, in wheelchairs, and children who struggle to get to the dental office.

Discussion

Two cognitive walkthroughs were conducted with my critical friend classmates and this revealed a problem (Nielsen's severity rating of 4) that I needed to add content to the website related to the second task (Nielsen, 1995b). They also were not able to navigate and find the information so the suggestion was made to add drop down menus to the tab for ease of use. To make sure that necessary information was included, I consulted with the project's SME to make improvements to the content of the website. This website provides just-in-time information for all stakeholders.

Although a majority of participants think that the website design is appealing (See Appendix V), throughout every testing round and all iterations of the website, the recurring comment was the font needs to be changed (See Appendix X). In the post-survey, users said that they could get to information quickly (See Figure 2). In the first iteration during T1 (task 1 – find why you should volunteer), the participants scrolled and found the information on the homepage. During the second iteration the tabs and drop-downs were added and the users did not scroll down to find the information, instead they clicked on the tabs or drop-downs and found other information for them to partially complete the task. The information was moved to the top of the home page during the third iteration and all users were successful in completing the task (See Table 6). This reveals that participants like to click on buttons in websites to instantly find information to accomplish the tasks at hand. All of participants agree or strongly agree that the website has a clear purpose and interesting content (See Figure 2).

VDH has a positive impact in the community and this is why, the Maui Mayor will be issuing a proclamation on May 7, 2019 to Dr. Glassman for bringing the VDH project and teledentistry to Hawaii. This project is exciting because of the value to the dental hygiene students, the VDH staff, the patients, and the community on Maui. This website is current and is available for students at the right time. All users agree or strongly agree that volunteering seems more attractive after viewing the website (See Figure 3).

The idea of volunteering with the VDH project seems more attractive after viewing the website.

13 responses

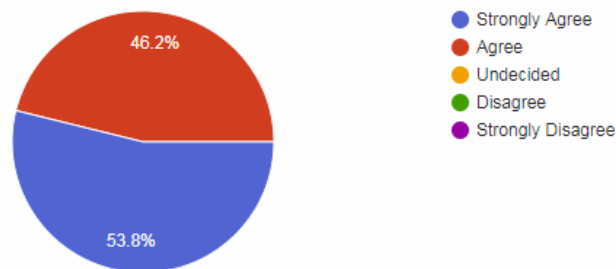


Figure 3. Post-survey – Volunteering seems more attractive

The students are motivated to volunteer in the VDH pilot project after viewing the website and they are excited by the premise of having their chosen career expanding into new and exciting locations. The student's needs for an easy way to access information about the VDH project are met by the comprehensive website. The website was successful in educating current participant students and it will also educate the future generations of dental hygiene students. This will encourage stakeholders to buy into the VDH project, ensure continuity of the VDH project, and promote expansion of the project into more sites in the community.

In the United States, a majority of dental hygienists are white females who work in private practice (Institute of Medicine (US) Board on Health Care Services, 2009). The students who participated in the study were a representative group of dental hygiene students (See Table 4). The profession of dental hygiene is comprised of individuals who are compassionate and go above and beyond to help people. Hygienists are prevention specialists and they have an internal drive and mission to prevent dental disease and treat dental diseases. The students have chosen this profession to care for people in their community and because they empathize with those in need. The website shows the ways that the VDH project removes some of the barriers to healthcare services. As each participant viewed the website, they all had positive things to say about the site and about the rationale for participating in the VDH pilot project. The students were extremely motivated by seeing pictures in the website of the happy patients, and can appreciate how they could lovingly bond with the patients when they volunteer.

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TABLES

Table 2

Tasks Completed During Usability Study

Task number	Task (T)
T1	Using this website, where would you find information about the reasons why you should volunteer in the VDH project?
T 2	Using this website, where would you go to find information about new teledentistry technology?
T 3	Using this website, where can you find the information explaining what you would need when you go to a site visit.
T 4	Using this website, find where and when the scheduled VDH site will be next week?

Table 3

Follow-up Research Questions

Question number	Research Questions (RQ)
RQ 7	Have you ever needed to perform tasks like the ones you did in the usability study today? If yes, compared to your prior experience, would you say that the tasks you performed today were easier or more difficult? Why?
RQ 8	If you could make one significant change to this website, what change would you make?
RQ 9	After participating in this study, would you recommend this website to any of your classmates? Why? Why not?

Table 4

Participant Demographics N=13

Characteristics	Number	Percentage
Age: 18-23	3	23%
24-28	5	38%
29-33	4	31%
34+	1	8%
Sex: Male	2	15%
Female	11	85%

Table 5

Excerpt from Mayer's Principles

Principle	Definition
Coherence Principle	People learn better when extraneous words, pictures and sounds are excluded rather than included.
Signaling Principle	People learn better when cues that highlight the organization of the essential material are added.
Spatial Contiguity Principle	People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.
Personalization Principle	People learn better from multimedia lessons when words are in conversational style rather than formal style.

Table 6

Website Changes with Associated Nielsen's Severity Rating

Changes after round 1	Changes after round 2	Changes after round 3
Added times for VDH site visits Severity Rating = 4	Moved why volunteer up to the top on the homepage Severity Rating = 4	Changed calendar to embedded Google calendar with VDH dates and times Severity Rating = 4
Added current site visit dates on calendar Severity Rating = 4	Moved how to create a virtual dental home to drop-down tab on the homepage Severity Rating = 3	Removed spaces and - lines so that pictures would be visible at the edge of the screen Severity Rating = 2
Made a “contact us” drop-down with contact information content on “Where is VDH” tab Deleted “let’s chat” pop up Severity Rating = 3	Changed cursive font to block font Severity Rating = 2	Made sign up a clickable red link to my email address Severity Rating = 2
Moved HIPAA to drop-down tab on the homepage Severity Rating = 3	Changed narrative of “clients treated with aloha” – deleted, “there are many reasons why volunteer ...” Severity Rating = 2	

APPENDICES

Appendix A

Homepage – With Photo of Geriatric and Child Client


[Virtual Dental Home Maui](#)[Virtual Dental Home](#)[How to Do Teledentistry](#)[Where is VDH?](#)[Special Needs](#)

Volunteer Now!

Virtual Dental Home Maui

Why Volunteer?

- Actively learn about administering oral care in varying environments
- Learn about caring for keikis, special needs clients, and kupunas
- Understand proper client care while gaining real world experiences
- Learn to resolve individual oral care issues in a professional and caring manner
- Create valuable professional relationships with dentists, medical staff, and others using technology
- Beneficial to your personal and academic life



Clients are all treated with aloha

The health of the community is in your hands

- Please kokua. Virtual Dental Home (VDH) is needed, and part of it has to do with maintaining a relationship with the community.
- [Sign up now](#) by sending an email to your instructor (higalea@hawaii.edu) detailing the date and time you would like to volunteer in the VDH project.

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Appendix B

How to Do Teledentistry Page and New Technology Subpage

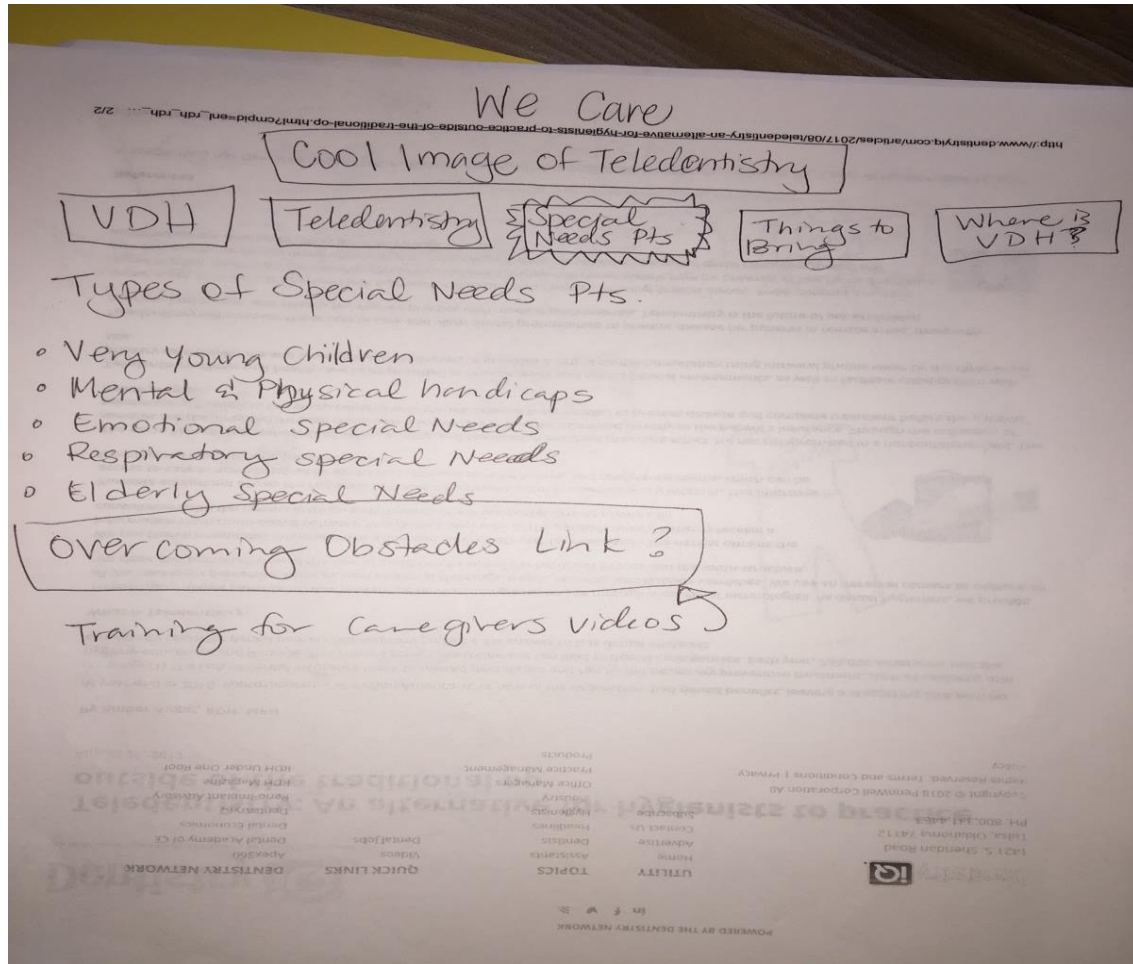


Figure B1: Teledentistry Page



Figure B2: New Technology Subpage

Appendix C
Paper Prototype Page - Special Needs Patients




Appendix D
Video on How to Care for Special Needs Clients

[Virtual Dental Home Maui](#) Virtual Dental Home How to Do Teledentistry Where is VDH? Special Needs

People Desperately Need Your Specialized Dental Care!

Special Needs Clients





- Keiki - children are at risk for early childhood caries.
- People with developmental disabilities
- People with acquired disabilities
- Medically compromised clients
- People with emotional special needs
- Physically or mentally handicapped clients
- Kupuna - elderly clients have very special needs

Vulnerable Populations

There are people who are at high risk for dental diseases. You can make a difference.

Caregiver Training

[View this Google slide](#)



Appendix E
Recruitment Email to Students

To: Dental Hygiene Students

From: Ms. Leanne Higa

Subject: Invitation to Participate in a Website Usability Study

Aloha,

My name is Leanne Higa. I am a master's student in the University of Hawaii at Manoa's (UHM) Learning Design and Technology (LTEC) Program. I am conducting a usability study to improve the website I am developing for University of Hawaii Maui College (UHMC) dental hygiene program students. This website is designed to promote the volunteer aspect of the Virtual Dental Home (VDH) teledentistry project on Maui. I am looking for students who may be interested in providing suggestions and feedback for improvement, changes, and to learn what works and doesn't work in the website.

Usability study overview:

The usability study will occur in the Spring semester 2019.

The study will be approximately 1 hour.

With your permission and consent; your facial and body language reactions, conversations, and desktop screen activities will be recorded for the purpose of the study.

1 minute pre-survey

1 minute pre-study interview

45 minute website usability study

4 minute post-survey interview

4 minute post-survey

Schedule of testing:

Round 1: 3-5 participants January 2019

Round 2: 3-5 participants January 2019

Round 3: 3-5 participants February 2019

All studies will be held in the teacher office in Noi'i 101.

If you are interested in participating, please email me at: higalea@hawaii.edu

For Round 1 - email your RSVP by December 20th

For Round 2 - email your RSVP by January 5th

For Round 3 - email your RSVP by January 20th.

Mahalo!

Ms. Higa

Appendix F
Consent and Recording Release Form



University of Hawai'i
Consent to Participate in a Research Project

Curtis Ho, Principal Investigator

Leanne Higa, Other Investigator

Project title: Volunteer Now! Virtual Dental Home Maui: A Usability Study on a Teledentistry Website

Aloha! My name is Leanne Higa and you are invited to take part in a research study. I am a graduate student at the University of Hawai'i at Mānoa in the Department of Learning Design and Technology (LTEC). As part of the requirements for earning my graduate degree, I am doing a research project.

What am I being asked to do?

You have been selected to participate in this study based on your age (must be at least 18 years or older), background (must be a dental hygiene student attending the University of Hawaii Maui College UHMC), and have technology and computer experience. If you participate in this project, I will meet one-on-one with you for an interview at a UHMC Noi'i room 101 in the teacher's office at a time convenient for you.

Taking part in this study is your choice.

Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you. Your choice to participate or not participate will not affect your rights, grades, or status in the UHMC dental hygiene program. Your relationship with UHMC or myself will not be affected. Participating in this usability study will have no direct benefits to you and your grades will not be affected by your participation or non-participation.

Why is this study being done?

The purpose of this usability study is to evaluate the functionality and value of a website developed as a resource to support dental hygiene students from the University of Hawaii Maui College as you volunteer in the Virtual Dental Home (VDH) project.

What will happen if I decide to take part in this study?

A total of three rounds (3-5 participants in each round) of individual usability studies will be conducted. The interview will consist of 8-10 open ended questions. It will take 45 minutes to an hour.

The interview questions will include questions like, "Using this website, where would you go to find information about new teledentistry technology?" and "Using this website, find where and when the scheduled VDH site will be next week?"

The interview will include scenarios such as, "You have decided to volunteer next week. You would like to prepare for the site visit. You need to know where the VDH site will be next week. And you want to make sure you are ready for the volunteer experience."

I will meet each of the participating volunteers alone and in person in the UHMC teacher's office Noi'i 101. You will be asked to complete a pre-survey consisting of 5

demographic questions and previous volunteer experience questions on Google forms. For convenience, you will use my laptop. Only you and I will be present during the interview. With your permission, I will audio-record the interview so that I can later transcribe the interview and analyze the responses. You will be one of about 9-15 people I will interview for this study. With your permission, I will also video-record only the computer screen during the interview so that I can analyze your scrolling and mouse movements during the interview. The video recording will assist me in seeing where you are navigating in the website, what pages that you open, and how long it takes you to find information during the usability study. I will then proceed with the scenarios/tasks protocols (a Scenarios & Task Sheet will be sent to you prior to the study). Upon completion of the scenarios/task portion, I will conclude the study with the post-study interview and post-survey.

What are the risks and benefits of taking part in this study?

I believe there is little risk to you for participating in this research project. You may become stressed or uncomfortable answering any of the interview questions or discussing topics with me during the interview. If you do become stressed or uncomfortable, you can skip the question or take a break. You can also stop the interview or you can withdraw from the project altogether.

There will be no direct benefit to you for participating in this interview. The results of this project may help improve the dental hygiene program to benefit future students.

Activities:

1. I will collect the signed Consent & Recording Release Form.
2. I will allow the participant to complete the pre-survey.
3. I will begin session recording.
 - Proceed with the usability study: pre-study interview, scenarios/tasks, and post-study interview.
4. I will end recording and conclude the study.
5. I will allow the participant to complete the post-survey.

Privacy and Confidentiality:

I will keep all study data secure in a locked filing cabinet in a locked office/encrypted on a password protected computer. Only my University of Hawai'i advisor Dr. Ho and I will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawai'i Human Studies Program has the right to review research records for this study.

After I write a copy of the interviews, I will erase or destroy the audio-recordings. When I report the results of my research project, I will not use your name. I will not use any other personal identifying information that can identify you. I will use pseudonyms (fake names) and report my findings in a way that protects your privacy and confidentiality to the extent allowed by law.

Compensation:

You will not receive any compensation for participating in the research study.

Future Research Studies:

Even after removing identifiers, the data from this study will not be used or distributed for future research studies.

Questions:

If you have any questions regarding the study or your rights as a participant, please feel free to contact me or my advisor.

Leanne Higa (Student/Study Facilitator)

Email: higalea@hawaii.edu

Noi'i 101 Office Phone: (808) 984-3313

Dr. Curtis Ho (Advisor)

Email: curtis@hawaii.edu

You may contact the UH Human Studies Program at 808.956.5007 or uhirb@hawaii.edu to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <http://go.hawaii.edu/jRd> for more information on your rights as a research participant.

If you agree to participate in this project, please sign and date this signature page and return it to: Leanne Higa

Keep a copy of the informed consent for your records and reference.

Signature for Consent:

I give permission to join the research project entitled, "*Volunteer Now! Virtual Dental Home Maui: A Usability Study on a Teledentistry Website.*"

Please initial next to either "Yes" or "No" to the following:

☐ Yes ☐ No I consent to be audio-recorded for the interview portion of this research.

☐ Yes ☐ No I consent to the computer screen being video-recorded for the interview portion of this research for the purpose of evaluating the mouse movements and scrolling behavior during the research study.

Name of Participant (Print): _____

Participant's Signature: _____

Signature of the Person Obtaining Consent: _____

Date: _____

Mahalo!

Appendix G
Photo of Teledentistry Operatory Set Up and After Break Down



Appendix H
CITI Training Certificate



Figure H1: Certificate for Human Subject Research, Exempt Researchers and Key Personnel, and Basic Course



Figure H2: Certificate for Social and Behavioral Responsible Conduct of Research Curriculum and Course Leadership, and Basic Course



Figure H3: Certificate for Information Privacy Security, Exempt Researchers and Key Personnel IPS, and Basic Course

Appendix I
Access Letter

Leanne Higa
PO Box 880560
Pukalani, HI 96788
higalea@hawaii.edu

Dental Hygiene Program
University of Hawaii Maui College
310 Ka'ahumanu Ave.
Kahului, HI 96732

Date:

Dear Director,

Request for Permission to Conduct Usability Study

I am a candidate in the Master's in Education degree program for the Learning Design and Technology Program (LTEC) in the University of Hawaii at Manoa. My instructor is Dr. Curtis Ho.

My research topic is: Volunteer Now! Virtual Dental Home Maui: A Usability Study on a Teledentistry Website.

The objective of the study is to assess and evaluate the website's usability, effectiveness, efficiency, and the satisfaction as participants assume scenarios and perform tasks.

I am asking for your permission in allowing me to perform a usability study with dental hygiene students as participants. I also request that I be allowed to contact them for participation in the study through their hawaii.edu email account. Your permission will be greatly appreciated. Please do not hesitate to contact me or my instructor if you have questions or need clarification at any time.

My (student) email address is: higalea@hawaii.edu. Dr. Curtis Ho's (instructor) email address is: curtis@hawaii.edu. Please email me a letter if you will grant my request for permission.

Respectfully,

Leanne Higa

Appendix J

Confirmation Email to Students

To: Dental Hygiene Student

From: Ms. Leanne Higa

Subject: Invitation to Participate in a Website Usability Study

Aloha,

Thank you for consenting to assist me in my usability study to improve the website I am developing for University of Hawaii Maui College (UHMC) dental hygiene program students. This website is designed to promote the volunteer aspect of the Virtual Dental Home (VDH) teledentistry project on Maui. Thank you for agreeing to provide suggestions and feedback for improvement, changes, and to learn what works and doesn't work in the website.

Usability study overview:

The usability study will occur in the Spring semester 2019.

The study will be approximately 1 hour.

With your permission and consent; your facial and body language reactions, conversations, and desktop screen activities will be recorded for the purpose of the study. All recordings will be erased after the completion of the study.

1 minute pre-survey

1 minute pre-study interview

45 minute website usability study

4 minute post-survey interview

4 minute post-survey

You have been scheduled for:

Round 1: Tuesday, January 8, 2019 at 8:30 am, 10 am, or 11:30 am.

or

Round 2: Tuesday, January 22, 2019 at 8:30 am, 10 am, or 11:30 am.

or

Round 3: Tuesday, February 5, 2019 at 8:30 am, 10 am, or 11:30 am.

All studies will be held in the teacher office in Noi'i 101.

If these dates or times are not convenient for you, please email me at:

higalea@hawaii.edu

Mahalo!

Ms. Higa

Appendix K
Checklist for Usability Test

Volunteer Now! Virtual Dental Home Maui
Leanne Higa

At-A-Glance

1. Before
 - a. Have your usability technology checklist and plan handy
 - b. Open WIX website: Volunteer Now! Virtual Dental Home Maui
 - c. Welcome and explain the test to your participant
 - d. Have the participant log onto their email account to access the Google Form to complete only the pre survey questionnaire.
 - e. Have the participant log out.
 - f. Log into facilitator's email account to allow Google Drive access.
 - g. Start Screencastify by clicking on the ⇒ arrow on the upper right corner of the screen.
 - h. Make sure desktop is highlighted and that the webcam is detected and selected.
 - i. Click on the ↗ button to decide where the webcam will be placed on the screen.
 - j. Click on the record tab button.
 - k. Click on the blue share button to ensure that the entire desktop is shared
 - l. Work through your usability protocol with your participant
2. During
 - a. Be prepared to perform any technical support needed
 - b. Ensure your participant is "thinking aloud" - remind him or her every 45 seconds
 - c. When recording time ends (every 10 minutes), pause the session while saving the recording.
 - d. Click on the < button to share on Google drive.
 - e. This may need to be done multiple times to record the entire session.
3. After
 - a. End screen share on Screencastify.
 - b. Click on the < button to share on Google drive.
 - c. Thank your participant and ask if they have any further questions
 - d. The archived Screencastify sessions are now stored as a video in Google Drive.
 - e. Log out of facilitator's email account.
 - f. Have the participant log onto their email account to access the Google Form to complete only the post survey questionnaire without changing their pre survey questionnaire answers.
 - g. Have the participant log out.

Setting Up & Conducting the Study:

1. Set up your laptop and attach all cords/peripherals
 2. Plug in to a power outlet (don't trust the battery)
 3. Make sure you are connected to the Internet
 4. Set up audio and test
 - a. Ensure the microphone is working
 - b. Ensure the volume is at a reasonable level
 5. Explain your study to participant.
 6. Ensure that they understand all directions, that the usability test will take approximately one hour with multiple pauses to save the recordings, and that they are free to stop or take a break at any time with no penalties.
 7. Next, begin screen recording using Screencastify. This can be done by clicking on the ⇒ arrow on the upper right corner of the screen.
 8. The screen recording time limit is 10 minutes, so this may need to be done multiple times.
 9. When the participant has completed their tasks end recording.
 10. Thank them for their participation and ask if they have any further questions.
-

After the Study:

1. Log onto Google Drive to access the recordings.
2. Quickly scrub through the video to ensure the integrity of the audio and video
3. Create a file for each participant's recordings labeled A, B, C, etc.

Modified from *Rocket Surgery Made Easy*

© 2010 Steve Krug

Appendix L
Pre-Survey and Post-Survey Questions - Google Forms

For target participant demographics, knowledge base, and current experience.

- What is your gender (required) ☐ Male ☐ Female
- Age (required) ☐ 18-23 ☐ 24-28 ☐ 29-33 ☐ 34+
- Do you have any experience volunteering in the dental field? (required) ☐ YES ☐ NO
- If you answered “yes” to the question above.
- How many times have you volunteered in the dental field? ☐ 0-3 times ☐ 4-7 times ☐ 8-11 times ☐ 12 times or more
- Did you enjoy your previous dental volunteer activities? ☐ YES ☐ NO

Post-Survey Questions

For target participant website and content feedback.

- If you had to give the website a grade, from A to F, where “A” was exemplary and “F” was catastrophic, what grade would you give it? (required) ☐ A ☐ B ☐ C ☐ D ☐ F
- Why? (required) Short answer:

Please help me improve the website by answering the following questions with:

Strongly Agree

Agree

Undecided

Disagree

Strongly Disagree

1. My knowledge of the Virtual Dental Home (VDH) project has increased after viewing the website.
2. The idea of volunteering with the VDH project seems more attractive after viewing the website.
3. I am prepared to volunteer in the VDH project after viewing the website.
4. My attitude towards working as a hygienist using teledentistry has improved after viewing the website.
5. It is easy to find my way around the website.
6. I can get to information quickly.
7. The overall website design is appealing.
8. The website has a clear purpose and the content interested me.
9. I am satisfied with the design of the website
10. I am satisfied with the website performance.

Appendix M
Scenarios and Tasks Sheet

Initial Perception Scenario:

Your dental hygiene instructor shared with you a link to a website. This is the homepage of that website.

- What stands out to you?

Please talk to me as you give me your initial reaction to this page colors, graphics, photos, etc.

Feel free to explore this page as you normally would. You can scroll around with the mouse, but please don't click on anything just yet.

- What do you think is the purpose of this website?
- What do you think you can do here?
- Who do you think is the audience for this website?
- Who is it intended for?
- Without clicking on anything yet, please describe the options you see on the homepage and what you think they do.

Feel free to move around the page, but again I'll ask you not to click on anything right now.

Scenario: You are a dental hygiene student who is curious about the Virtual Dental Home (VDH) project on Maui.

Task 1: Using this website, where would you find information about the reasons why you should volunteer in the VDH project?

If you feel that you have completed this task, please say, "complete;" or if you can't find the information being asked, please say, "I can't find it."

Task 2: Using this website, where would you go to find information about new teledentistry technology? Please remember to think-out-loud.

If you feel that you have completed this task, please say, "complete;" or if you can't find the information being asked, please say, "I can't find it."

Scenario:

You have decided to volunteer next week. You would like to prepare for the site visit. You need to know where the VDH site will be next week. And you want to make sure you are ready for the volunteer experience.

Task 3: Using this website, where can you find the information explaining what you would need when you go to a site visit. Please remember to think-out-loud.

Task 4: Using this website, find where and when the scheduled VDH site will be next week?

If you feel that you have completed this task, please say, “complete;” or if you can’t find the information being asked, please say, “I can’t find it.”

Appendix N

*Usability Test Script***Usability test script****Leanne Higa****Volunteer Now! Virtual Dental Home Maui**Modified from *Rocket Surgery Made Easy* © 2010 Steve Krug**THE INSTRUCTIONS**

Web browser should be open to Google or some other “neutral” page

Hi, _____. My name is Ms. Higa, and I’m going to be walking you through this session today.

Before we begin, I have some information for you, and I’m going to read it to make sure that I cover everything.

You probably already have a good idea of why I asked you here, but let me go over it again briefly. I’m asking people to try using a website that I am working on so I can see whether it works as intended. The session should take less than an hour.

The first thing I want to make clear right away is that I’m testing the *site*, not you. You can’t do anything wrong here. In fact, this is probably the one place today where you don’t have to worry about making mistakes.

As you use the site, I’m going to ask you as much as possible to try to think out loud: to say what you’re looking at, what you’re trying to do, and what you’re thinking. This will be a big help to me.

Also, please don’t worry that you’re going to hurt my feelings. I’m doing this to improve the site, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we’re interested in how people do when they don’t have someone sitting next to them to help. But if you still have any questions when we’re done I’ll try to answer them then. And if you need to take a break at any point or if you want to stop, just let me know.

Before we begin this session, I would like you to do a pre study questionnaire.

I have not begun the screen recording, so all of your information is private. Please log on to your hawaii.edu email account and click on google forms.

I have invited you to complete a pre and post study interview question form. Can you find it? Please open the Google form.
Could you fill out only the pre study portion for me?

The participant will log on to their email account and click on google forms. Direct the participant to fill out the pre study portion.

You may have noticed the laptop camera and microphone. With your permission, I'm going to record what happens on the screen and our conversation. The recording will only be used to help me figure out how to improve the site, and it won't be seen by anyone except the people working on this project. And it helps me, because I don't have to take as many notes.

Also, there are a few people from the web design team who may observe this session at another time.

If you would, I'm going to ask you to sign a simple permission form for me. It just says that I have your permission to record you, and that the recording will only be seen by the people working on the project. At this time, I will start the screen recording.

Give them a recording permission form and a pen
While they sign it, START the SCREEN RECORDER

Do you have any questions so far?

THE HOME PAGE TOUR

OK, great. We're done with the questions, and we can start looking at things.

Click on the bookmark for the site's Home page.

Initial Perception Scenario:

I have shared with you a link to a website. This is the homepage of that website.

Feel free to explore this page as you normally would. You can scroll around with the mouse, but please don't click on anything just yet.

- What stands out to you?

Please talk to me as you give me your initial reaction to this page colors, graphics, photos, etc.

- What do you think is the purpose of this website?
- What do you think you can do here?
- Who do you think is the audience for this website?

Without clicking on anything yet, please describe the options you see on the homepage and what you think they do.

Feel free to move around the page, but again I'll ask you not to click on anything right now.

Allow this to continue for three to four minutes, at most.

THE TASKS

Thanks. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud and give you a printed copy.

I'm also going to ask you to do these tasks without using search. I will learn a lot more about how well the site works that way.

And again, as much as possible, it will help if you can try to think out loud as you go along.

Hand the participant the first scenario, and read it aloud.
Allow the user to proceed until you don't feel like it's producing any value or the user becomes very frustrated.
Repeat for each scenario and task or until time runs out.

Scenario: You are a dental hygiene student who is curious about the Virtual Dental Home (VDH) project on Maui.

Task 1: Using this website, where would you find information about the reasons why you should volunteer in the VDH project?

If you feel that you have completed this task, please say, “complete;” or if you can’t find the information being asked, please say, “I can’t find it.”

Task 2: Using this website, where would you go to find information about new teledentistry technology? Please remember to think-out-loud.

If you feel that you have completed this task, please say, “complete;” or if you can’t find the information being asked, please say, “I can’t find it.”

Scenario:

You have decided to volunteer next week. You would like to prepare for the site visit. You need to know where the VDH site will be next week. And you want to make sure you are ready for the volunteer experience.

Task 3: Using this website, where can you find the information explaining what you would need when you go to a site visit. Please remember to think-out-loud.

Task 4: Using this website, find where and when the scheduled VDH site will be next week?

If you feel that you have completed this task, please say, “complete;” or if you can’t find the information being asked, please say, “I can’t find it.”

PROBING

Thanks, that was very helpful.

I would like to ask you a few follow up questions.

Please think back to other websites you have visited before. Have you ever needed to perform tasks like the ones you did in the usability study today? (required) ☐ YES ☐ NO

● If you answered “yes;” compared to your prior experience, would you say that the tasks you performed today were easier or more difficult? ☐ Easier ☐ Difficult

● Why? Short answer: _____

● If you could make one significant change to this website, what change would you make? (required) Short answer: _____

● After participating in this study, would you recommend this website to any of your classmates? (required)

☐ YES ☐ NO

● Why? / Why not? (required) Short answer: _____

Now that we are done with that, would you please fill out the post study interview questions on Google forms?

Direct the participant back to the Google form and allow them to complete the post study interview questions.

The participant should log out of their Google account and Google forms after completing the form.

WRAPPING UP

Do you have any questions for me, now that we're done?

Give them their incentive, or remind them it will be sent to them.

Stop the screen recorder and save the file.

Thank them and escort them out.

Appendix O
Photo Release Form

University of Hawai'i at Manoa College of Education Dept. of Learning Design & Technology and University of Hawai'i Maui College Dental Hygiene program

Contact Release: I agree to allow the College of Education and the University of Hawai'i Maui College dental hygiene program to share my name with other students in the dental hygiene program on a website for Volunteer Now! Virtual Dental Home Teledentistry for class purposes.

☐ Yes ☐ No

Signature _____ Date _____

Photo Release Permission to Record, Broadcast and/or Publish Electronic Sound or Image**

The following release form is a document of understanding regarding permission to display or broadcast an individual's image or work by or through the University of Hawai'i, College of Education and University of Hawai'i Maui College Dental Hygiene Program and its various projects and endeavors. My signature on this form acknowledges my agreement with the terms below. I hereby give my permission to the University of Hawai'i, College of Education and the University of Hawai'i Maui College Dental Hygiene Program to record and display, electronically or otherwise:

(printed name)

I understand that any recordings will be used exclusively for educational purposes and to promote University of Hawai'i programs, which may include open-circuit (broadcast), closed-circuit, cable television transmission, DVD/CD distribution and/or Internet and Web publication within or outside of the State of Hawai'i in perpetuity and that the College of Education and the University of Hawai'i Maui College Dental Hygiene Program will hold the copyright of the resulting recordings and all ancillary materials.

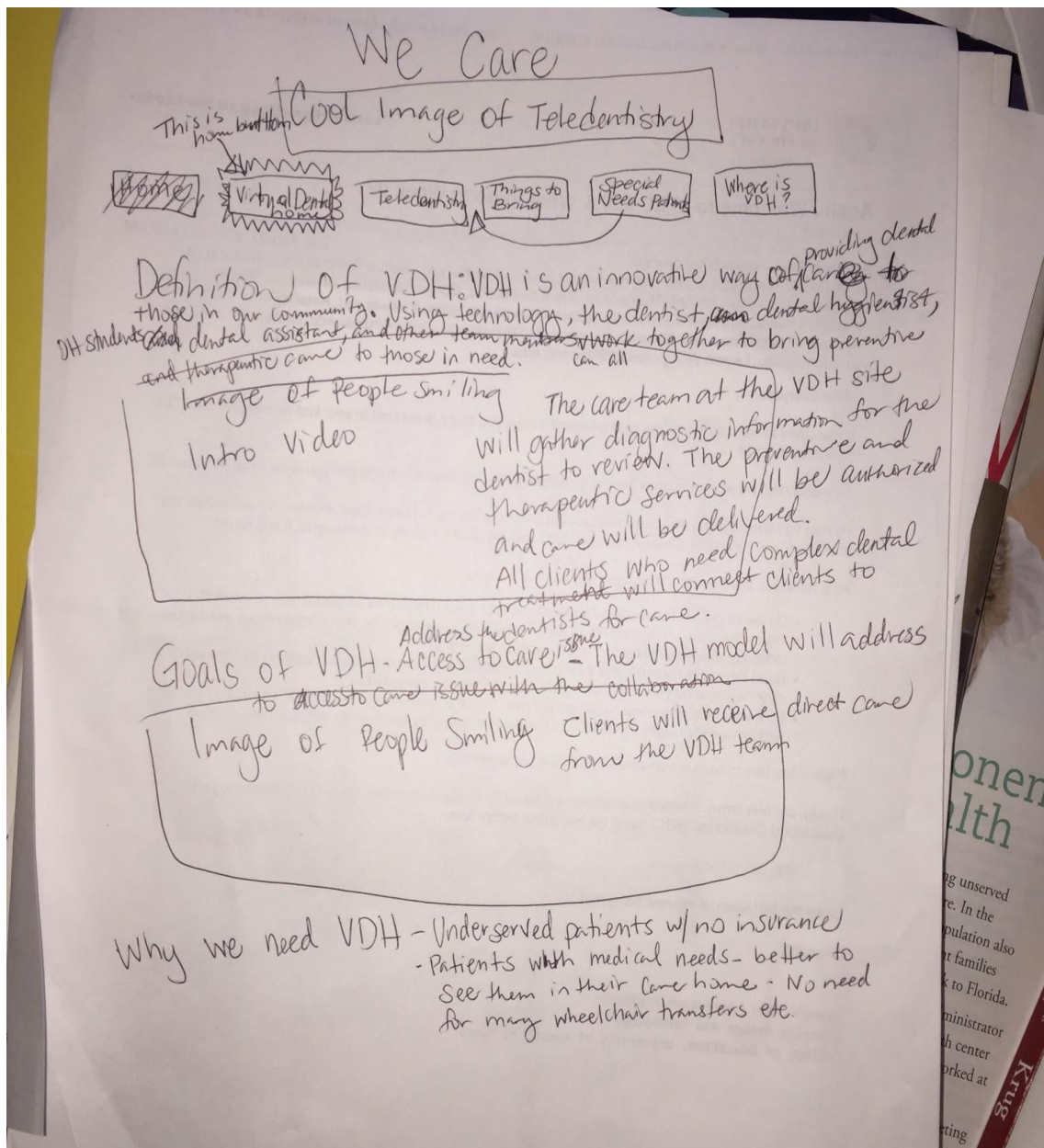
I also understand that there will be no financial or other remuneration for recording me, either for initial or subsequent transmission, distribution or playback, and that the University of Hawai'i, is not responsible for any expense or liability incurred as a result of my participation in this recording, including medical expenses due to any sickness or injury incurred as a result. The College of Education and the Dental Hygiene Program may use my name, likeness and/or bibliographical identification for publicizing and promoting the use of these recordings and to further the development of the project.

SIGNATURE:

Date _____

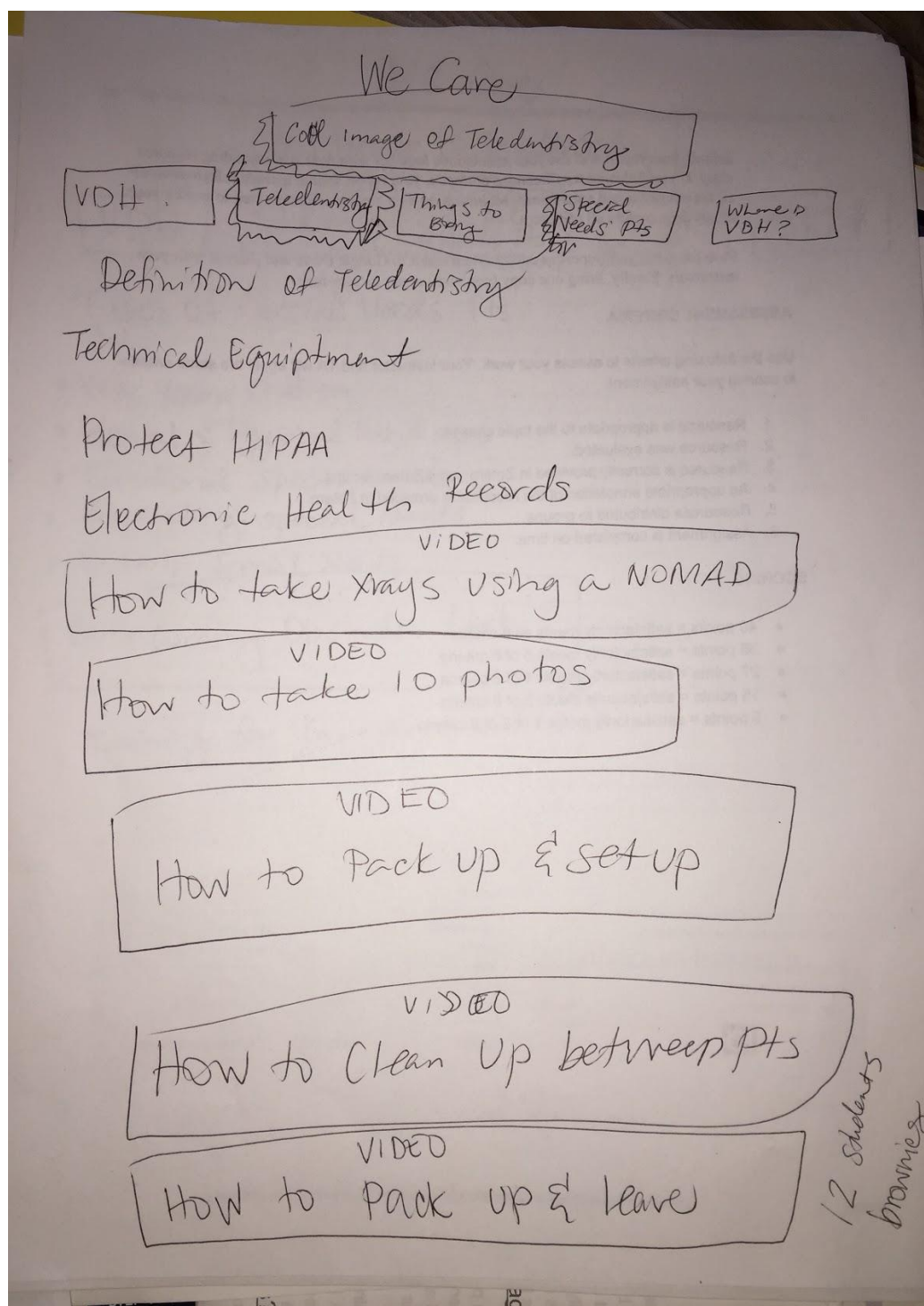
** Note: this release allows us to take photos in class for brochures, ads, projects, and other uses related to the functioning of the College.

Appendix P
Paper Prototype Home Page - Virtual Dental Home



Appendix Q

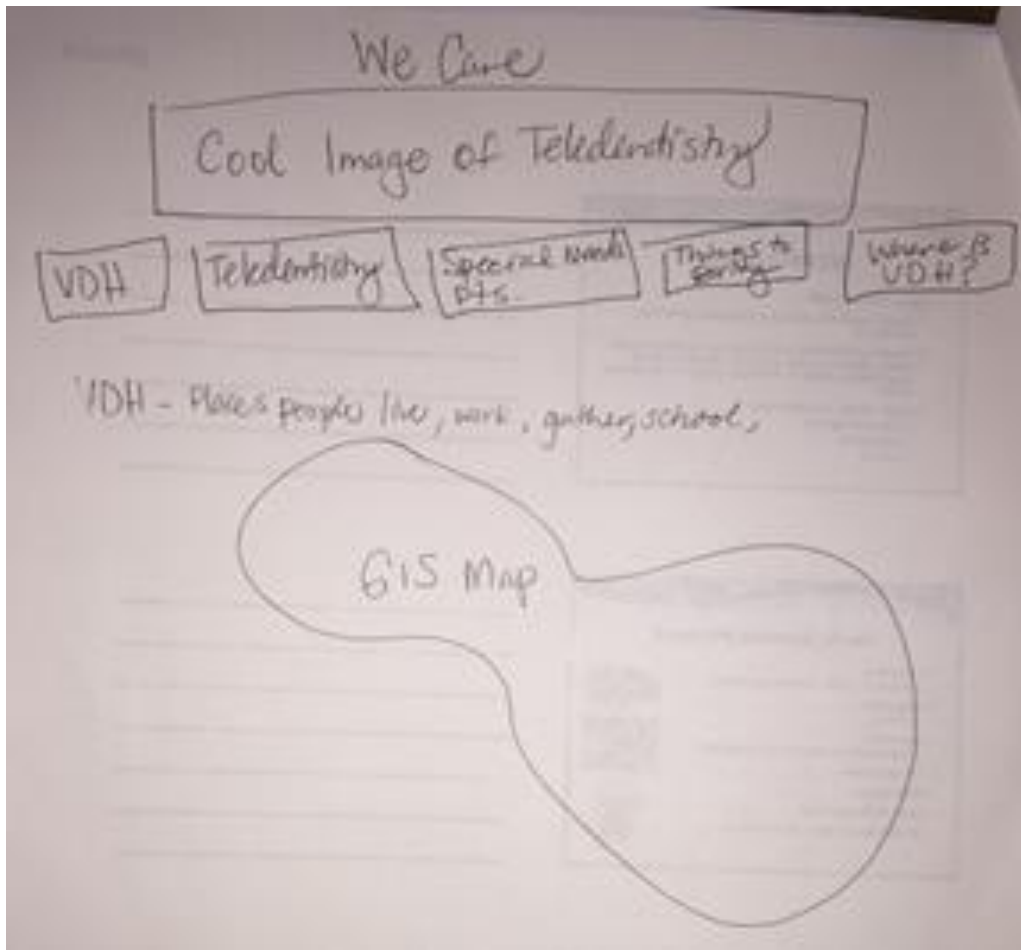
Paper Prototype Page – Teledentistry



Appendix R
Paper Prototype Page - Things to Bring



Appendix S
Paper Prototype Page - Where is VDH?

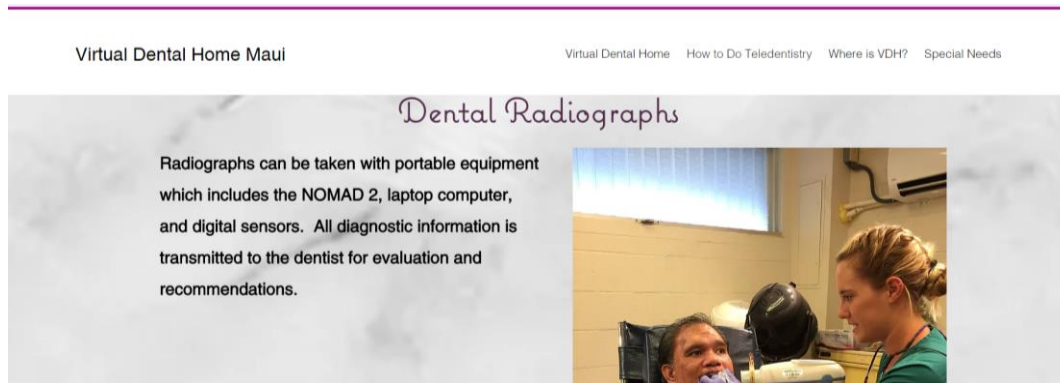


Appendix T
WIX – Prototype with Black Background



Appendix U

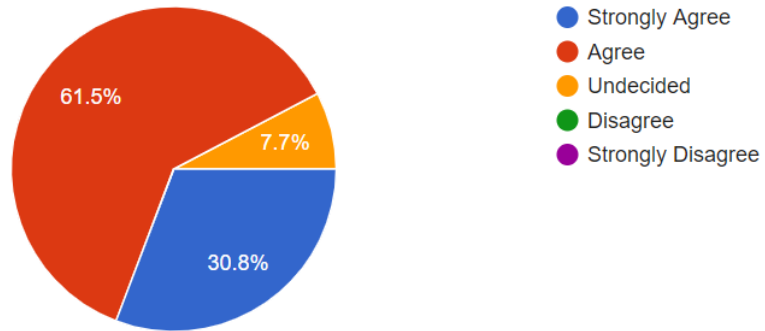
Website with Light Colors



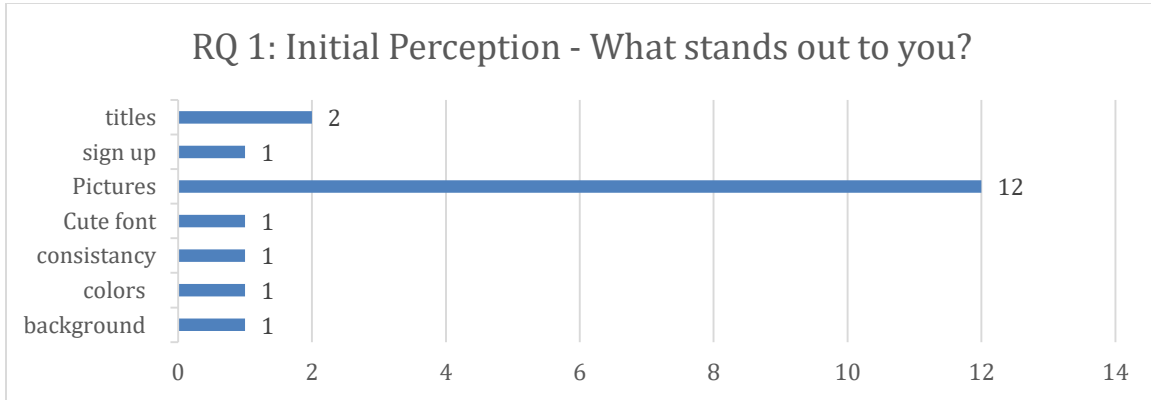
Appendix V
Pie chart. Overall Website Design.

The overall website design is appealing.

13 responses



Appendix W
Initial Perception – Pictures Stand Out to Participants (open-ended question)
N=13



Appendix X
Initial Perception – Font (open-ended question)
N=13

